Comments Received from Mr. Bryan Plemmons following the Final TMDL Public Meeting held on March 27, 2002

Our Response to: Draft Benthic TMDL Reports for Six Impaired Stream Segments in the James River, and Potomac and Shenandoah River Basins

Having been trained in the sciences, and being quite aware of the protocol that must occur with the scientific method, it is evident that this study does not approach the tenets of sound science. Dr. Tamim Younos, in his presentation of this study on March 27, 2002, referred to the methods used in this study as constituting "inexact science." "Inexact science" is "no science" in any sense of the phrase. There are numerous references to the uncertainties involved in this study. In fact, there is an entire section devoted to many of these uncertainties, and it is frightening to think that any decisions could be made, based on these unknowns, that would affect the livelihoods of those involved in the culture of trout. There is more true scientific proof that these streams are not impaired by trout culture than there is "inexact scientific" proof that they are impaired, as this TMDL study has endeavored to show.

The alleged "impaired" designation has already done much harm to Virginia's trout industry. Virginia's trout culturists, with the support of the Virginia Department of Agriculture Services, Virginia Farm Bureau, Virginia Agribusiness Council, and the Virginia Department of Environmental Quality, worked extremely hard to produce and approve the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Concentrated Aquatic Animal Production Facilities. It now appears all of that work has gone for naught. The DEQ has now ruled that the General Permits will no longer be granted to those facilities on impaired streams. A tremendous burden has been reinstated on these six facilities, placing the three commercial hatcheries at a competitive disadvantage with other Virginia hatcheries that haven't been studied, and with trout operations in neighboring states. It is enormously inequitable that the state has chosen only three commercial hatcheries to force into the penalties associated with the "alleged" impairment designation.

It is ironic that we are even discussing water quality leaving trout culture facilities. Trout are world renown as ecological indicator species of high quality water. Trout culturists perform their own bioassays 24/7/365. Trout species are extremely sensitive to physical and chemical habitat degradation, yet there are many anglers who will attest to the great trout fishing available in trout culture facility tailwaters. If the water even approaches less than premium quality in a trout culture facility, at the least, production suffers; at worst, the product is dead.

It is also noted that any increased regulation is neither needed nor justified by existing water quality data. An independent study of the impacts of trout culture effluent by Va Tech (Selong and Helfrich, 1998) revealed a high rate of compliance (>99 %) with their permit limits. Only 13 water quality limits were surpassed out of 2,160 tests conducted in 1990-94. I would suspect that compliance would be even greater if looked at today.

Now for the uncertainties. It is inconceivable that these so called stream impairments have been judged so by such unsound science as what has occurred in at least some of these cases.

First of all, according to the method of assessment used, the RBP II, it is stated that this method can not always be relied on to properly assess pristine sterile mountain streams, which necessarily are the streams used by trout culturists in Virginia. What method of assessment should be used? Uncertain.

Since 1991, EPA has been promoting the Watershed Protection Approach as a framework for meeting the Nation's remaining water resource challenges (USEPA 1994c). The watershed approach places emphasis on all aspects of water resource quality - physical (e.g., temperature, flow, mixing, habitat); chemical; and biological. It appears that DEQ is applying only one of those criteria to get the end result they desire. Why? Uncertain.

In Section 2.3.4 CWA Section 303(d) - The TMDL Process states that "some stressors, such as sediment deposition ... might not clearly fit traditional concepts associated with chemical stressors and loadings. For these nonchemical stressors, it might sometimes be difficult to develop TMDLs because of limitations in the data or in the technical methods for analysis and modeling." Section 2.3.5 further states that "USEPA does not recommend the use of biological survey data as the basis for deriving an effluent limit for an NPDES permit." Why then is DEQ using biological survey data as the basis for developing TMDLs? Uncertain.

Section 6.2.2, p.13 states "Some pristine headwater streams may be naturally unproductive, supporting only a very limited number of taxa. In these situations, organic enrichment may result in an increased number of taxa (including EPT taxa)." This sentiment is again repeated on p. 14. Did DEQ biologists find an increased number of taxa below trout operations? No. Did they determine impairment due to organic enrichment? Yes. Why? Unknown.

Secondly, impairment was determined based on studies performed between 1995 and 2001. Between 1985 and 1996, there occurred over most parts of western Virginia six 100-year flooding events. Damage due to flooding was even noted by the assessor. On the day of sampling, at one of the sites, a water flow of 3 cfs was estimated. This flow was 3 times the normal flow rate for that farm, indicating a flooding event had or was occurring. Did this have an effect on the sampling data? Probably. What was the effect? Unknown. Is this data being used against trout culturists? Yes. Even without the 100-year floods, trout culture streams, located in high runoff areas, are subject to stream scouring on an almost yearly basis. Without relatively stable food dynamics, an imbalance in functional feeding benthic groups will result, reflecting stressed conditions. According to the EPA, the usefulness of functional feeding measures for benthic macroinvertebrates has not been well demonstrated. Difficulties with the proper assignment to functional feeding groups has contributed to the inability to consider these reliable metrics. Trout farmers remove almost 100% of the leaf litter that would normally make its way into the stream. What affect does removing almost 100% of the leaf litter from the stream have on the scraper population? Could this contribute to a higher impairment rating? Uncertain. Or perhaps removing the leaf litter is having a beneficial effect of reducing the organic load entering the stream. I don't see where trout farmers are given any credit in the TMDL study for their efforts in reducing the organic load by removing tons of leaves from the streams each year.

On page 21, Section 3.5.2, it is stated that "Hydraulic alterations, either high flows or low flows, can negatively impact the benthic community and be a critical stressor... High flows can scour the substrate, move rocks and other valuable habitat areas downstream, and often carry higher loads of sediment and other pollutants." This statement was then followed with "Flooding, therefore, was not incorporated into the TMDL calculation." I find this an incredulous determination. It is generally agreed that most benthic macroinvertebrate species have a complex life cycle of approximately one year or more. How long does it take for a benthic community to recover after being scoured out from flooding? Ohio EPA found that fish responded (recovered) more quickly than did benthos to restoration activities. Although significant improvement was observed in the condition of both assemblages in the river from 1980 to 1991, the benthic assemblage was still impaired in several reaches of the river. That’s 11 years and still not back to normal. It has only been 5 and a half years since our last 100 year flooding event. Have the benthics had enough time to recover? After 11 years, benthics still had not recovered in Ohio. Too many uncertainties.

Thirdly, why weren’t site-specific references performed instead of ecoregional references? According to EPA’s own guidance, the 2 types of references may not yield equivalent measurements. The advantages of measuring upstream reference conditions are these: (1) if carefully selected, the habitat quality is often similar to that measured downstream of a discharge, thereby reducing complications in interpretation arising from habitat differences, and (2) impairments due to upstream influences from other point and nonpoint sources are already

factored into the reference condition. NY DEC has found that an upstream-downstream approach aids in diagnosing cause-and-effect to specific discharges and increase precision. Innate regional differences exist in forests, lands with high agricultural potential, wetlands, and waterbodies. Elevation has been found to be an important classification variable when using the benthic macroinvertebrate assemblage. In addition, descriptors at a smaller scale may be needed to characterize streams within regions or classes. For example, even though a given stream segment is classified within a subecoregion or other type of stream class, it may be wooded(deciduous or coniferous) or open within a perennial or intermittent flow regime, and represent one of several orders of stream size. Individual descriptors will not apply to all regional reference streams, nor will all conditions (i.e., deciduous, coniferous, open) be present in all streams. When RBPs are used to assess impact sources, regional reference criteria may not be as important if an unimpacted site-specific control station can be sampled. Sampling locations must be similar enough to have similar biological expectations, which in turn, provides a basis for comparison of impairment. If the goal of an assessment is to evaluate the effects of water chemistry degradation, comparable physical habitat should be sampled at all stations, otherwise, the differences in the biology attributable to a degraded habitat will be difficult to separate from those resulting from chemical pollution water quality degradation.

No scientist, worth the cost of the paper his diploma was printed on, would even consider comparing production and biological growth data gathered from springs located so many miles apart. There are too many innate and uncontrollable variables. How then can TMDLs or any other regulation for that matter be based on the same inexact science? Since site-specific studies appear to be more reliable than ecoregional references, why weren’t site-specific studies used?

According to the EPA, an accurate assessment of stream biological data is difficult because natural variability cannot be controlled. Unlike analytical assessments conducted in the laboratory, in which accuracy can be verified in a number of ways, the accuracy of macroinvertebrate assessments in the field cannot be objectively verified. For example, it isn’t possible to "spike" a stream with a known species assemblage and then determine the accuracy of a bioassessment method. This problem is not theoretical. Different techniques may yield conflicting interpretations at the same sites, underscoring the question of accuracy in bioassessment. Depending on which methods are chosen, the actual structure and condition of the assemblage present, or the trends in status of the assemblage over time may be misinterpreted. Several questions have been raised concerning the appropriateness or "accuracy" of methods such as RBPs, which take few samples from a site and base their measures or scores on subsamples. Subsampling methods have been debated relevant to the "accuracy" of data derived from different methods (Courtemanch 1996, Barbour and Gerritsen 1996, Vinson and Hawkins 1996). The Arizona DEQ determined that macroinvertebrate assemblage structure varied substantially within ecoregions resulting in large metric variability among reference sites and poor classification. If EPA is addressing the uncertainty of these methods, why should trout culturists have any faith in them?

Given the often wide variation of natural geomorphic conditions and landscape ecology, even within supposedly "uniform" site classes, it is desirable to examine 10 or more reference sites. Data from at least 30 sites sampled within a brief time period are need to define performance characteristics. Did DEQ look at 30 reference sites? Ten? No. In fact, on page 7 of the study, it is stated, "There are dissimilarities between the reference streams and the impaired streams. Differences between the watershed sized of the impaired streams and the reference sites are evident (Table 2.1). Additionally, the flow differs in some cases ... For these reasons and others, the TMDL team, DEQ personnel, and local stakeholders sought additional reference sites, but we were not able to locate a minimally influenced reference site with compatible water chemistry and watershed characteristics." It is even noted that "Wallace Mill water chemistry *is not* compatible with its reference stream, Ingleside." How can there be confidence in these studies?

According to the EPA, a generic habitat assessment approach based on visual observation can be separated into 2 basic approaches - one designed for high-gradient streams and one designed for low-gradient streams. Within a given physiographic-climatic region, stream drainage area and overall stream gradient are likely to be strong natural determinants of many aspects of stream habitat, because of their influence on discharge, flood stage, and stream power. If these two types of streams are to be evaluated on different terms because of their differences in substrates and water velocities, why were not these factors taken into account by DEQ. High gradient streams were referenced to low gradient streams. Unsound science.

A prime example of another potential weakness and unscientific nature of the RBP methodology is the high degree of flexibility that the RBPs give in developing an assessment of the physical characteristics of a waterbody. The physical characteristics of a stream are based on a scale of 0-20 for a range of physical parameters. They are visually based, that is, the investigator uses his/her eyes and a range of options as to scale to determine the physical ranking of a stream. This is vital, because if the stream is improperly ranked, it may be compared to the wrong regional reference stream. This would be like comparing apples to oranges, and would lead to wrong conclusions about the "health" of a measured receiving waterbody.

On page 9, Section 3, of this study, it is stated that "Regression analysis can be used to develop such a relationship between stressors and the benthic community. Researchers have attempted to develop general relationships using available data, but results for these studies are either inconclusive or indicate high uncertainty in relationship. For this TMDL report, sufficient bioassessment and water quality data were not available to allow using the regression analysis method to establish a statistically valid linkage between stressors and benthic condition." Further in this section, there are frequent references to "probable stressors," "likely stressors," and "professional judgement." None of these qualifiers and phrases lends to the credence of that which is to follow.

On page 11, Section 3.2.1.1, it is stated that "Isopods (sow bugs) and chironomids (midges), which are common in nutrient enriched waters, consistently dominated within five of the impaired streams." This sentiment is repeated in the next paragraph: "The evidence was indicated primarily by a numerical dominance of taxa such as oligochaetes, isopods and planaria, taxa that are tolerant of poor water and habitat quality." What is not mentioned is that isopods and planaria are also indicators of good water quality according to Izaak Walton League's Save Our Streams information. (http://www.people.virginia.edu/~sos-iwla/Stream-Study/Cata.../SensitiveTaxa.HTM). DEQ accepts and uses data collected by the SOS monitors. There appears to lack of agreement as to whether or not isopods and planaria can live in good water quality. Further doubt is edging in on this study's validity. Abundant scientific evidence exists to prove that the presence of isopods does not indicate poor water quality. At the Cochran Spring site, there are sections of the spring branch that are unaffected by trout culture. Isopods dominate the benthic life in these sections as well as in the effluent. This proves at least one of the following scenarios: 1)The spring headwaters are impaired (not likely), 2)isopods do not necessarily indicate poor water quality (likely), or 3)impairment of the stream due to trout culture can not be proven by the presence of isopods (most probably). This one instance is all the scientific proof needed to refute RBP II methodology as nothing more than an indicator of conjecture. Further, there are no riffles/runs at the Cochran Spring facility to make benthic sampling comparable to the reference streams. The riffles/runs begin on the adjacent properties which are trafficked immediately by trucks, tractors, ATVs, and many cattle. On page 27, and in Appendix A, it is stated that Cockran Spring Branch was clearly impaired. It can in no way be clear that any of the so called impairment can be confidently attributed to trout culture. This site does not lend itself to conditions necessary for RBP methodology. Sound scientific evidence indicates that there is little or no change in the benthic community between the unaffected portion of the spring and the portion of the creek that receives the water from the trout raceways. No, Cockran Spring Branch is *not clearly* impaired at the point it leaves the trout culturist's property. Sound scientific evidence points to no impairment due to trout culture.

I think it is interesting to note that even the principal investigators of this TMDL have expressed misgivings about relying on the data gathered by these methods. Recently, TMDL Project Manager Tamim Younos, and Project Coordinator Jane L. Walker, expressed concerns about using stream biota as sole indicators of stream health. Here are some of their comments presented at the National Water Quality Monitoring Conference on April 25-27, 2000. "...(T)he use of biological data in developing a stressor-pollutant response function for water quality management, for example to calculate allowable pollutant loads as required by the TMDL plans poses problems. The first problem is a lack of coordination between biological and ambient water quality monitoring programs. A response function cannot be developed in the absence of extensive long-term continuous ambient water quality data that is consistent with spatial and temporal biological monitoring data... The second problem...is the lack of a benthic standard. Comparison of an impaired stream to a reference stream...does not appear to be a valuable yardstick to determine if a stream meets water quality goals in different environmental settings...within the same ecoregion. Thirdly,...it may not be possible, or may at least be very difficult, to isolate various contributing factors to determine with certainty the extent to which the stream biota relate to water quality degradation or improvement. Also, there could be a considerable lag time in the improvement of biological communities following habitat restoration or pollution problem abatement. The extent of this lag time is difficult, if not impossible, to predict and makes the evaluation of a water quality management program less effective during the restoration and recovery period...(F)or water quality management purposes, biological monitoring needs to be used in conjunction with physical and chemical monitoring. To implement effective water quality management and TMDL plans, it may be more realistic to consider criteria other than benthic conditions." There can be no confidence in using this TMDL study as a basis of fact, and there is certainly no scientific evidence that any practices imposed will improve water quality.

The question really becomes is there true impairment, and if there is what can be done about it? There are trout culture operations in Virginia that are using settling ponds and/or vacuuming of solids, yet their waters are still deemed impaired. What else can be done in these situations? It is unknown. There must be other factors involved, and the organics may have very little effect on so-called stream impairment. I foresee much money and effort being spent with little or no significant environmental quality improvement.

On page 103, Section 13.2.1 there are listed recommendations to improve water quality of aquaculture effluents. I would like to make some general comments on some of these recommendations.

Sedimentation and Settling Basins (Items 1-4):

Some fish culture sites were constructed without settling basins. In many of these cases, the last production raceway is built close to the landowner’s property line in order to optimize production from the water supply. To convert the last raceway to a settling basin would result in a loss of up to 25% of fish production, and likely subsequent closure for that facility. Some small farms are constructed on as little as two to three acres of land and do not have adjacent land available for additional waste treatment options. To require the farmer to devote even 1 acre for additional facilities is neither practical nor affordable.

Typically, where large springs are located, the topography along the stream is relatively flat, requiring trash pumps in order to clean and maintain the settling basins. Tractors, which would be required to handle solids, are not traditionally required equipment on a trout farm. The purchase and maintenance of a front-end loader/tractor are very expensive additions to a small business, especially if it is only to be used a few times a year. Tractor rental is not always an option in remote areas where many farms are located. Additionally, equipment rental operators would not likely allow a front-end loader to be rented to a trout farm for removal of collected solids

more than once. Those of you who have gotten on a backhoe after it was used for this purpose certainly understand that it would be very difficult to rent this unit again without requiring substantial payment for cleaning and deodorizing!

Labor to clean quiescent zones is generally about 0.5 hours per quiescent zone, but for cleaning only. This does not include time required to move and set-up equipment. Cleaning of sedimentation basins must also include the cost of hauling the materials from the site. This material is approximately 85% water and is quite expensive to haul any distance. Costs must include driver and truck(s). Cleaning frequency varies depending on facility size, number of off-line settling basins, and time of year for land application. In most cases, off-line systems have redundancy built in so that one basin can be shut down and "drying" while the other(s) are operating. Again, not all facilities have access to a front-end loader to harvest the settling basins and may use pumps to remove the material. As a result, the labor costs will differ depending on the methodology used for removal of solids from the basins as well as the region of the farm. In more humid climates, the collected solids will not dry sufficiently and must be handled as a liquid slurry. Farmers may have to pay landowners a "disposal fee" for land application and these costs need to be included in the analysis.

The installation of sediment traps is applicable only to construction of new raceways. Many existing small facilities were not designed for quiescent zones. Retrofitting may be possible in concrete raceways, but adding quiescent zones in earthen raceways or ponds may not be possible or beneficial to water quality. Many earthen raceways with gravel bottoms are still in use, particularly on smaller farms. The appearance of the fish from these systems is a major component of their marketability, an especially important factor for many smaller trout facilities.

Consideration of reduced production and lost revenue from either concrete or earthen raceways is not addressed when production space is sacrificed for quiescent zones. In reality, the entire earthen system functions much as a settling area, and adding quiescent zones or additional basins would be redundant for those systems. Adding or expanding quiescent zones within existing facilities will result in loss of revenue for both concrete and earthen systems.

The labor involved at 0.5 hour per raceway per day, and weekly cleaning may not be feasible for the small fish farmer. Many small farmers have as many as 20-30 raceways. This would require additional labor requirements of up to 2 man-days per week. For many small farmers, hiring additional labor is not an option due to cost and labor availability. Idaho waste management guidelines (Idaho Division of Environmental Quality 1997) recommend cleaning of lower raceways every two weeks, and one cleaning per month for upper raceways. Facilities on ambient temperature water do not feed or feed infrequently during cold periods, thus there is no need to clean once per week or even once a month during winter. As far as nutrients are concerned, dissolved phosphorus stabilizes in trout feces 24 hours after release from the fish (Garcia-Ruiz, R. and G.H. Hall, 1996. Phosphorous fractionation and mobility in the food and faeces of hatchery reared rainbow trout (Oncorhynchus mykiss) Aquaculture 145:183-193). Further breakdown occurs at a very limited rate after that time. Solids are rarely resuspended in quiescent zones.

Land Application of Manure (Item 5):

For existing facilities without manure storage already in place, the location of such a storage facility could be a problem, or nearly impossible in some cases. Flood plain issues could be enormous. There are some localities that are regulating against manure storage. There could be odor complaints from neighbors. I am not aware of any complaints about trout farm effluents as trout farms are currently operating.

Very few full-time trout farmers also produce row crops. The activities of raising trout and running the business leave little time for the pursuit of other agricultural activities. Most trout farm operations do not have enough land to land apply trout manure. There are trout farms in Virginia that operate on just 2 acres of owned land. Others that have more acreage have very little pasture type fields. Much of their lands are mountainous and/or forested. In some instances, trout production could be integrated with crop production. However, there could be no guarantees that a trout farmer would be able to negotiate with a neighboring farmer to accept his fish manure. Much education and field trials would have to be performed to persuade a crop farmer to try fish manure on his fields. In addition, crop application of manure could occur only at certain times of the year, specifically between harvesting and planting of the crops, when there is likely to be the most runoff events due to frozen ground.

Detailed Bi-weekly Records (Item 11):

The record keeping, monitoring, and paperwork associated with this recommendation is extremely onerous for the small business fish culturist and do not contribute to improving water quality. Prudent fish farmers are already taking care of the issues presented here. A fish farmer does not need to document every step he takes during the working day nor does the small business farmer have the time to keep such detailed records. Most fish farmers are already operating at high stress levels themselves, having to deal with the riskiest form of agriculture in keeping their stocks alive.

Removing fines from feed (Item 16):

Fines collection is no longer an issue in properly produced expanded and extruded feeds. In contrast to the stated objective of minimizing feed usage, a more desirable goal should be to maximize the efficiency of nutrient and energy retention, not minimize feed input.

On page 104, Section 13.2.3, it is stated that "some European countries use feed types and amounts instead of effluent concentrations to monitor the input of solids and other pollutants to streams. This is one of the scariest statements in the entire study for Virginia's trout culturists. It is true that some European countries, such as Denmark, have dictated the amount of feed that each culturist could feed annually. This governmental intrusion subsequently killed the growth of the trout industry in Denmark.

Taken from a different approach, it has been scientifically documented that in terms of fisheries and wildlife, streams below trout hatcheries are much more productive than the sterile mountain streams, i.e., more birds, fish, mammals, reptiles, and amphibians. Can DEQ make the judgment as to which is more desirable, stonefly larva or eagles, osprey, trout, bear, racoons, and human enjoyment? Most people would say that the presence of trout farms have enhanced the environment around them in terms of increased populations of wildlife and fisheries.

I could not close with words any better than those put down by the authors of this TMDL draft in Section 13.1.1. "There is significant uncertainty in the biomonitoring and organic solids load target selection. It is impossible to select a comparable reference site that exactly matches the targeted stream characteristics. As was described earlier in this report, the headwaters of the impaired streams are springs that have unique water chemistry. Therefore, the natural water chemistry of the reference stream is not identical to that of the impaired stream. There are also significant differences between the reference streams and the listed impaired segments in the watershed sizes, physical characteristics, and flow rates. In summary, sufficient data are lacking to describe

the composition of the benthic community in the listed impaired segments prior to the introduction of human activity, presuming that this is the target to be sought." There is no sound scientific basis for the impairment determination of these six streams. EPA references to waters impaired by aquaculture have been tracked down and ground-truthed by the National Association of State Aquaculture Coordinators. There is almost no connection of aquaculture with impaired water claims. The TMDL has not relied on establishing a water quality baseline. Additionally, there is no evidence that practices imposed by the impairment designation will improve water quality. This designation, however, will have the potential of costing hundreds of thousands of dollars in private and public funding. These costs will far outweigh any benefits derived. This upsets me as a taxpayer, and as a farmer.

Before imposing additional expenses on Virginia's trout culturists, please consider that EPA has estimated that annualized costs for the least expensive BMP options that they have proposed range from 14% up to 406% of gross revenues, a cost that cannot be sustained by these farms or passed on to consumers. Trout must compete in the marketplace against other meat and seafood products, but in particular against imported trout and salmon. For the past decade pond bank prices paid to trout farmers have remained flat while imports of trout and salmon have increased 464% and 346%, respectively (National Marine Fisheries Service, USDC). Additionally, for the past six years, due to below average precipitation, trout production in Virginia has fallen 20-30%. Most operations have been operating at a loss or break-even pace during this time. Some trout farms here in the east (at least four that I am aware of) have had to shut down completely due to lack of water.

We ask that you consider that, in addition to the possibility of contributing to the demise of small-business trout culture in Virginia, there are multiplying factors of supporting and supported businesses that are associated with our industry. There are feed and equipment companies that are dependent on the trout industry remaining viable. There are a myriad of businesses associated with recreational fishing that could not exist without aquaculture. Tackle suppliers, bait and boat shops, marinas, fee-fishing operations, the tourism aspects are all interdependent upon fish culture. There also has to be the "social consideration" of how the loss of farms, jobs and revenue will impact the community in which the farm is located.

Please consider the people factor. Trout farmers employ many people that some would consider unemployable. Trout farmers are reliant upon God to make a living. Most are excellent stewards of the resources entrusted to them. These are farmers who would love to have someone pay their health care and health insurance costs; farmers who would love to have someone offer them a pension and retirement plan; farmers who would love not to have to struggle to send their children to college. No one is forcing the trout farmer to farm for a living, but up until the last few years, they have enjoyed what they do and have been able to make a living at it. Take a look at their tax returns and you will see that small business trout farmers have extremely little wiggle room for expenses that are non-productive.

We ask that you consider the studies, like those at Virginia Tech, and others, that have shown that any impacts a trout farm may have are mitigated in the stream after a mere 400 m. In other words, one cannot even tell a trout culture facility is above them just by studying the stream. Trout farmers have been under the NPDES permitting process for the last 20 years. There are 20 years of water quality monitoring data that are a matter of public record. In those 20 years, I am not aware of any trout farm that has been identified as a pollutant threat to the receiving waters. Trout farming has proven to be a clean industry, easily meeting the standards that have been set for them.

Consider also the studies that prove the environmental enhancements due to trout hatcheries. There are increased wildlife and fisheries populations below trout culture facilities and the increase in these populations are directly due to the hatcheries. Trout culture facilities already remove tons of organic leaf litter and untold silt and

sedimentation runoff amounts from what otherwise would have made it to the stream. Truly, any impact of streams, like beauty, is in the eye of the beholder.

Respectfully submitted,

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DEQ's Response to the Comments Received from Mr. Bryan Plemmons following the Final TMDL Public Meeting held on March 27, 2002

April 30, 2002

Mr. Bryan Plemmons
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Re: Comments on Trout Farms draft TMDL report

Dear Mr. Plemmons:

Thank you for thoroughly reviewing the Trout Farms TMDL draft report and submitting your comments. The Department of Environmental Quality (DEQ) appreciates your thoughtful responses to the content and limitations of the TMDL study. You have raised a number of very good points, including the fact that neither the bioassessment process, nor the TMDL process, is an exact science. Unfortunately, as scientists dealing with the natural world, we recognize that we seldom have the opportunity to practice exact science. We all know that the natural world offers too many variables and too few controls. The best we can do as scientists is to use the best available methods and understand the limitations of these methods in the face of uncertainty. We believe the TMDL study did just this. The references to uncertainty were made to avoid making irresponsible or misleading statements of fact. We believe the TMDL was the best study that could have been produced under the constraints of available technology, scientific methods, time, resources, and the law.

While the degree and magnitude of impairment of the six trout farm streams may be disputed, the fact remains that our existing water quality standards and assessment procedures show these streams to have impaired benthic communities. The trout farms have been identified as the main source of the impairment in these streams. Through the TMDL process, DEQ and the Department of Conservation and Recreation (DCR) are committed to working with the trout farms to resolve these water quality discrepancies. The goal of the TMDL is not to put trout farmers out of business or to put them at a competitive disadvantage with each other. To that end, DEQ and DCR will work with the trout farmers to implement the most cost-effective practices to achieve water quality improvements. We will continue to seek sources of funding for this implementation. DEQ is also looking at ways to be more consistent in its monitoring of trout farms across the state.

Finally, DEQ and DCR are sensitive to the socioeconomic implications of the TMDL on the trout farms. That is why we will continue to advocate a phased approach to implementation. In the face of the uncertainties identified in the report, it is the only responsible way, both scientifically and economically, to try to achieve water quality goals. We should stress that the goal of this TMDL is not necessarily to meet specific load reductions, but to improve water quality and the health of the benthic community. It is possible that we will see the desired improvements prior to realizing the projected loads identified in the report. However, if the management practices that are necessary to restore the health of the stream and meet water quality standards turn out to be cost prohibitive, we have the option to complete a Use Attainability Analysis (UAA). The UAA could potentially show that the standards cannot feasibly be met.

Your letter has been reviewed by DEQ and DCR TMDL staff and will be submitted to EPA as part of

the public comment record. We greatly value your input and look forward to working with you as we move through the TMDL process.

Sincerely,

Ronald D. Phillips
Planning and Permit Support Manager